photographic film, and the obtained video signals are sent via wires, radio waves, or storage devices, to the color printer of this invention to form an index print.

Although the digital micromirror device has been described as a spatial light modulator, the color printer of this invention may use a piezoelectric drive type micromirror device, in which each micromirror is tilted by a fine piezoelectric element.

Although the present invention has been fully described by way of the preferred embodiments thereof with reference to the accompanying drawings, various changes and modifications will be apparent to those having skill in this field. Therefore, unless otherwise these changes and modifications depart from the scope of the present invention, they should be construed as included therein.

What is claimed is:

1. A color printer for printing an image on photosensitive material, comprising:

means for modulating the intensity of a laser beam with image data of one color, said modulator means having at least one micromirror array having a plurality of micromirrors disposed in line, wherein each of said micromirrors includes a first tilt state, a second tilt state and a horizontal state;

means for driving said modulator means to control a tilt of each of said micromirrors, said driver means driving during red exposure said modulator means in accordance with red image data to control a tilt of each micromirror, said driver means driving during green exposure said modulator means in accordance with green image data to control a tilt of each micromirror, and said driver means driving during blue exposure said modulator means in accordance with blue image data to control a tilt of each micromirror;

a red light source for striking said modulator means at a predetermined angle of incidence and illuminating said modulator means with red color light during the red exposure, said red light being disposed on a first line corresponding to said predetermined angle of incidence;

a green light source disposed downstream from said red light source along said first line corresponding to said predetermined angle of incidence for striking said modulator means at said predetermined angle of incidence and illuminating said modulator means with green color light during the green exposure;

a blue light source disposed downstream from said green light source along said first line corresponding to said predetermined angle of incidence for striking said modulator means at said predetermined angle of incidence and illuminating said modulator means with blue color light during the blue exposure; and

a projector optical system disposed in a second line corresponding to a first predetermined angle of reflection from said modulator means, for projecting red, green, and blue color light reflected from micromirrors of said modulator means which are disposed in said first tilt state onto the photosensitive material.

2. A color printer according to claim 1, wherein said modulator means includes N micromirror arrays, wherein N is a natural number, the micromirrors being disposed in a matrix.

3. A color printer according to claim 2, wherein said red light source is a red LED unit, said green light source is a green LED unit, and said blue light source is a blue LED unit.

4. A color printer according to claim 3, wherein each of the plurality of micromirror arrays takes at least one of a valid reflection state, wherein the micromirrors are disposed in said first tilt state, and an invalid reflection state, wherein the micromirrors are disposed in said second tilt state, based on micromirror drive data from said driver means, said valid reflection state being along said second line corresponding to said first predetermined angle of reflection from said modulator means, along which said red, green, and blue light are reflected toward the photosensitive material; and

said invalid reflection state being along a third line corresponding to a second predetermined angle of reflection from said modulator means, along which said red, green, and blue light are reflected toward a light absorption material.

5. A color printer according to claim 4, wherein said driver means frequency-modulates image data of each color and adjusts a total time of having the valid reflection state in accordance with the image data.

6. A color printer according to claim 5, further comprising a white light source disposed downstream from said blue light source along said first line corresponding to said predetermined angle of incidence for striking said modulator means at said predetermined angle of incidence and illuminating said modulator means with white light to record a monochrome image.

7. A color printer for printing an image on photosensitive material, comprising:

means for modulating the intensity of a laser beam with image data of one color, said modulator means having at least one micromirror array having a plurality of micromirrors disposed in line each capable of being controlled to tilt;

means for driving said modulator means to control a tilt of each of said micromirrors, said driver means driving during red exposure said modulator means in accordance with red image data to control a tilt of each micromirror, said driver means driving during green exposure said modulator means in accordance with green image data to control a tilt of each micromirror, and said driver means driving during blue exposure said modulator means in accordance with blue image data to control a tilt of each micromirror;

a red light source for striking said modulator means at a predetermined angle of incidence and illuminating said modulator means with red color light during the red exposure, said red light being disposed on a first line corresponding to said predetermined angle of incidence;

a green light source disposed downstream from said red light source along said first line corresponding to said predetermined angle of incidence for striking said modulator means at said predetermined angle of incidence and illuminating said modulator means with green color light during the green exposure;

a blue light source disposed downstream from said green light source along said first line corresponding to said predetermined angle of incidence for striking said modulator means at said predetermined angle of incidence and illuminating said modulator means with blue color light during the blue exposure; and

a projector optical system disposed in a second line corresponding to a first predetermined angle of reflection from said modulator means, for projecting red, green, and blue color light reflected from said modulator means onto the photosensitive material; and

a white light source disposed downstream from said blue light source along said first line corresponding to said predetermined angle of incidence for striking said modulator means at said predetermined angle of incidence and illuminating said modulator means with white light to record a monochrome image.

8. A color printer according to claim **7**, wherein said red light source is a red LED unit, said green light source is a green LED unit, and said blue light source is a blue LED unit.

9. A color printer according to claim **7**, wherein said modulator means includes N micromirror arrays, wherein N is a natural number, the micromirrors being disposed in a matrix.

10. A color printer according to claim **9**, wherein each of the micromirror arrays takes at least one of a valid reflection state and an invalid reflection state based on micromirror drive data from said driver means, said valid reflection state being along said second line corresponding to said first predetermined angle of reflection from said modulator means, along which said red, green, and blue light are reflected toward the photosensitive material; and

said invalid reflection state being along a third line corresponding to a second predetermined angle of reflection from said modulator means, along which said red, green, and blue light are reflected toward a light absorption material.

11. A color printer according to claim **10**, wherein said driver means frequency-modulates image data of each color and adjusts a total time of having the valid reflection state in accordance with the image data.

12. A color printer for printing an image on photosensitive material, comprising:

a modulator which modulates the intensity of a laser beam with image data of one color, said modulator including at least one micromirror array having a plurality of micromirrors, wherein each of said micromirrors includes a first tilt state, a second tilt state and a horizontal state;

a driver which drives said modulator to control a tilt state of each of said micromirrors, said driver driving during red exposure said modulator in accordance with red image data to control a tilt state of each micromirror, said driver driving during green exposure said modulator in accordance with green image data to control a tilt state of each micromirror, and said driver driving during blue exposure said modulator in accordance with blue image data to control a tilt state of each micromirror.

13. A color printer according to claim **12**, further comprising:

a red light source which strikes said modulator at a predetermined angle of incidence and illuminates said modulator with red color light during the red exposure, said red light being disposed on a first line corresponding to said predetermined angle of incidence;

a green light source, disposed downstream from said red light source along said first line corresponding to said predetermined angle of incidence, which strikes said modulator at said predetermined angle of incidence and illuminates said modulator with green color light during the green exposure;

a blue light source, disposed downstream from said green light source along said first line corresponding to said predetermined angle of incidence, which strikes said modulator at said predetermined angle of incidence and illuminates said modulator with blue color light during the blue exposure; and

a projector optical system disposed in a second line corresponding to a first predetermined angle of reflection from said modulator, which projects red, green, and blue color light reflected from micromirrors of said modulator which are disposed in said first tilt state onto the photosensitive material.

14. A color printer according to claim **13**, wherein said red light source is a red LED unit, said green light source is a green LED unit, and said blue light source is a blue LED unit.

15. A color printer according to claim **13**, wherein said modulator includes N micromirror arrays, wherein N is a natural number, the micromirrors being disposed in a matrix.

16. A color printer according to claim **15**, wherein each of the plurality of micromirror arrays takes at least one of a valid reflection state, wherein the micromirrors are disposed in said first tilt state, and an invalid reflection state, wherein the micromirrors are disposed in said second tilt state, according to micromirror drive data from said driver.

17. A color printer according to claim **16**, wherein said valid reflection state is along said second line corresponding to said first predetermined angle of reflection from said modulator, along which said red, green, and blue light are reflected toward the photosensitive material.

18. A color printer according to claim **17**, wherein said invalid reflection state is along a third line corresponding to a second predetermined angle of reflection from said modulator, along which said red, green, and blue light are reflected toward a light absorption material.

19. A color printer according to claim **16**, wherein said driver frequency-modulates image data of each color and adjusts a total time of having the valid reflection state in accordance with the image data.

20. A color printer according to claim **13**, further comprising a white light source, disposed downstream from said blue light source along said first line corresponding to said predetermined angle of incidence, which strikes said modulator at said predetermined angle of incidence and illuminates said modulator with white light to record a monochrome image.

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